

THE PROBABLE COLOR OF THE ANCESTRAL WINGED INSECTS.*

BY G. C. CRAMPTON, PH.D.

It would appear extremely probable that many (if not most) of the ancestral Pterygotan insects varied from honey-yellow to brown in color. The reasons for so thinking are as follows: (1) Honey-yellow to brown is a common color among the Chilopods, which have departed but little from the ancestral condition of insects in general. (2) Honey-yellow is a common color among the Apterygotan insects, which have departed but little from the ancestral condition of the Pterygotan insects. (3) Honey-yellow to brown is a color frequently occurring in immature insects. (4) Honey-yellow to brown is a common color among the most primitive orders of winged insects. (5) Honey-yellow to brown is a common color in the most primitive representatives of almost all of the orders of winged insects—even of the higher orders!

That honey-yellow to brown is a common color among Chilopods is at once apparent to anyone who examines a specimen of *Scutigera*, *Scolopendra*, etc., or any of the common Chilopods found under stones or dead wood in the neighborhood. This is not so evident in the case of the Apterygotan insects, however, since so many of them are colorless, due to their habit of hiding in places protected from the sunlight, and their sheltered habitats make it unnecessary for them to develop a harder protecting chitinous armor, which is always more deeply pigmented than thinner chitin. Nevertheless "Collembolan" insects, such as *Smynthurus*, *Orchesella*, *Deegeria*, etc., have a yellowish or brownish hue, and the more heavily chitinized specimens of *Campodea* are of a honey-yellow color. This shade also occurs in the more strongly chitinized terminal segments of *Japyx*, and I have seen a large Cuban Japygid which is entirely yellowish brown in color. The chitinous sclerites of the tropical Lepismids which live somewhat more "exposed" lives than our

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Northern representatives of the group, show tinges of a honey-yellow color, and from the foregoing instances it is evident that the "honey-yellow to brown" hue is of widespread occurrence among those forms which have departed but little from the ancestral condition of winged insects.

Honey-yellow to brown is a color frequently found in the immature stages of the lowest Pterygotan insects such as the Blattids and Plecoptera, and it is also very widespread among the larvæ of the higher forms, such as Coleoptera, Lepidoptera, Siphonaptera, etc. Taken alone, this fact has no especial significance, but in connection with the other instances here cited, it lends additional weight to the view that the color in question is a very widespread and primitive one.

Honey-yellow to brown is a very common color in the lowest representatives of the winged insects, such as the Blattids, Mantids, Isoptera, Plecoptera, Emibiids, Dermaptera, Grylloblattids, Phasmids, etc., and this fact should have considerable weight in such a discussion. The most convincing feature, however, is that the most primitive representatives of almost all of the orders seem to be of this color. *Grylloblatta*, which is one of the most primitive representatives of the "Orthopteroid" insects, is of a honey-yellow hue, and the same is true of *Ithone*, the most primitive of the Neuroptera. The same color occurs in *Merope*, which is an exceedingly primitive Mecopteron, and the "honey-yellow to brown" color is very common among the Tipulids and other primitive representatives of the Diptera. I have been unable to examine the most primitive representatives of all of the insectan orders, but the color in question occurs in so many of the lowest forms which I have been able to examine, that I feel confident that some, at least, of the most primitive representatives of all of the orders will prove to be of a honey-yellow to brown color, if the matter is investigated with this in view.

A "blackish" shade is also very common among certain primitive insects (*e. g.*, Plecoptera, Emibiids, Gryllids, Collembola, etc.), and a "grayish" tint occurs among many of the Apterygotan insects, being apparently a relic of their relationship to the Isopod Crustacea, but the varying shades of brownish yellow to brown are far more common among the Ptery-

gotan insects, and, from the above-cited evidence, I feel confident that a more thorough study of the matter, based upon the examination of more of the primitive representatives of each order than are at present available for study, will merely confirm the contention that "honey-yellow to brown" was the prevalent color among the ancestral Pterygotan insects.

NOTES ON HYMENOPTEREA PARASITICA.

BY A. A. GIRAULT, Glenn Dale, Md.

Hypopteromalus percussor n. sp.—Female: Like the genotype but differs as follows: the femora are metallic at proximal half (caudal ones nearly entirely metallic), the flagellum is darker. Types compared.

From two females reared from the larvæ of *Zothea tranquilla*, Wenatchee, Wash., June 22, 1916 (E. J. Newcomer). Types: Cat. No. 20,970, U. S. Nat. Mus., the females on tags, hind tibiæ and heads on a slide.

Eupteromalus sarcophagæ Gahan.—Differs from *Meroporus utibilis* Tucker in having the distinct lateral carinæ on the propodeum and the much longer than wide propodeal spiracle (mandibles not compared nor other parts); from *Halizoa rufipes* Ashm. in the cylindrical antennæ, lesser size and perhaps otherwise; from *Meroporus dubius* Ashm. not at all. Types compared.

Neomphaloidomyia n. gen. Tetrastichini.—The same as *Neomphaloides* but the scutum without a median groove, the antennæ with four ring-joints (1 and 4 large, equal). Stylus of abdomen very long, nearly as long as the ovipositor, which is extruded for a length equal to two thirds of the abdomen and is no wider than the stylus (*i. e.*, its valves are not). Tooth 3 of mandible truncate. Male scape compressed, with fine, sharp saw-teeth along its ventral margin, 4 funicle, 3 club and ring-joints. Genotype: *Hyperteles polynemæ* Ashm.

Neomphaloidella irvingi n. sp.—Female: Similar to *Aprostocetus canadensis* Ashm., but differing notably in that the funicle joints are twice longer than wide. Second two ring-joints very short.

One female, Springer, N. M. (C. N. Ainslie). Type: Cat. No. 21,011, U. S. Nat. Mus., the female on a tag, the head on a slide.